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10/527,315	12/02/2005	Hiroyuki Kawai	267381US0XPCT	9593
22850	7590	04/14/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
ENIN-OKUT, EDUE				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

## Application No.

10/527,315

## Applicant(s)

KAWAI ET AL.

## Examiner

Edu E. Enin-Okut

## Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**SEPARATOR FOR ALKALINE BATTERY AND USING SAME**

***Detailed Action***

1. The amendments filed on December 19, 2008 were received. Applicant has amended claims 1-4 and 7. Currently, claims 1-8 are pending.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

3. The reject of claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US 5,366,832) in view of Tamura et al. (US 6,156,869) are withdrawn because claims 1-4 and 7 were amended.
4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (US 5,366,832) in view of Oka et al. (US 5,760,608). Additional supporting evidence provided by *Physical Testing of Textiles*.

*Regarding claim 1*, Hayashi teaches a separator for alkaline batteries (i) which comprises a non-woven fiber structural material comprising a polyamide fiber and a cellulose fiber as main component fibers (Abstract; 8:4-8), wherein (iii) the cellulose fiber is a solvent-spun cellulose fiber produced by using a spinning solution prepared by dissolving cellulose into a non-reactive solvent (5:55-58).

As to (iv) a ratio of an amount by mass of the polyamide fiber to an amount by mass of the cellulose fiber in the non-woven fiber structural material is in a range of 20:80 to 50:50, Hayashi teaches that the incorporation rate of a cellulose fiber to the whole main fibers is preferably 75 to 40 wt. % (9:11-

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18). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I.).

Hayashi does not expressly teach that (ii) the polyamide fiber is a fiber formed with a polyamide constituted with a dicarboxylic acid unit and a diamine unit, the dicarboxylic acid unit comprising 60% by mole or more and 100% by mole or less of a terephthalic acid unit and the diamine unit comprising 40% by mole or more and 99% by mole or less of a 1,9-nonanediamine unit.

Oka teaches a polyamide, useful in industrial uses such as general-purpose engineering plastics, composed of a polyamide composed of 60 to 100 mole % of terephthalic acid and a diamine component comprising at least 60 mole %, preferably at least 75 mole %, and more preferably 95 mole %, of 1,9-nonanediamine (including mole % of 65, 70, 80, 85 and all ranges therebetween) (Abstract; 3:53-56, 4:12-16). The polyamide can be shaped into films and fibers (8:18-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the polyamide of Oka to form the polyamide fiber used in the separator of Hayashi because to improve the separator's mechanical and chemical properties (i.e., heat resistance, mechanical characteristics, low-water absorption property and chemical resistance) (see Oka, Abstract).

As to the use of a chain sealing agent in the manner recited in the claim, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. (It should be noted that Oka teaches that that amount of terminal blocking agent used will vary depending on the reactivity and boiling point of the terminal blocking agent, reaction apparatus, reaction conditions and the like, but it is generally in a range of 0.1 to 15 mole % based on the total moles of dicarboxylic acid and diamine (6:40-44). Further, as discussed above, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I.).)

As to the intrinsic viscosity of the polyamide, Oka teaches that the polyamide has an intrinsic viscosity of in a range of 0.6 to 2.0 dl/g, preferably in a range of 0.7 to 1.7 dl/g, more preferably in a range of 0.9 to 1.5 dl/g (including 0.7, 0.8, 0.9, 1.0, 1.1., 1.2, 1.3, 1.4., 1.5., 1.6, 1.7, 1.8 and 1.9 and all ranges therebetween) (7:16-22).

*Regarding claim 2*, Hayashi, as modified by Oka, teaches that the polyamide forming the polyamide fiber includes a mixture of a 2-methyl-1,8-octanediamine unit in combination with the 1,9-nonanediamine unit, with the molar ratio of between the 1,9-nonanediamine and 2-methyl-1,8-octanediamine being in a range of 60:40 to 99:1 (see Oka, Abstract). It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

*Regarding claim 3*, Hayashi, as modified by Oka, teaches that the polyamide forming the polyamide fiber has a fraction of sealed chain ends (i.e., molecular chain blocked with a terminal blocking agent) of at least 10%, preferably 70% (including at least 15, 20, 25, 30, 35, 40 45, 50 65, 60, and 65%, as are all ranges therebetween) (see Oka, 4:50-57).

*Regarding claim 4*, Hayashi teaches that the synthetic fibers used in the separators are 1 denier (~3.5  $\mu\text{m}$ ) or less, preferably 0.5 denier (~2.5  $\mu\text{m}$ ) or less, more preferably 0.3 denier (~1.9  $\mu\text{m}$ ) or less (8:45-47; see *Physical Testing of Textiles*, p. 47). One of ordinary skill in the art would readily appreciate that a polyamide fiber (i.e., a nylon fiber) with a size in the range of 0.01 to 0.8 dtex is equivalent to a fiber diameter of approximately 1.06 to 9.45  $\mu\text{m}$  (see *Physical Testing of Textiles*, p. 47). As discussed above, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

*Regarding claim 5*, Hayashi teaches the cellulose fiber is a solvent-spun cellulose fiber obtained by dry-wet spinning in water of a spinning solution prepared by dissolving cellulose into an amine oxide (2:55-58; claim 3).

*Regarding claim 6*, Hayashi teaches that the main component fibers are adhered together with a fiber-shaped binder (7:9-14).

*Regarding claim 7*, Hayashi teaches that the amount of binder used in the separator is in a range of 3.1 to 42.9 wt. % (7:44-51). As discussed above, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

*Regarding claim 8*, Hayashi, as modified by Oka, teaches an alkaline battery which is equipped with a separator for alkaline batteries described in claim 1 (Abstract; Fig. 1).

### ***Double Patenting***

5. The rejection of claims 1-6 and 8 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7-10 of U.S. Patent No. 5,366,832 in view of and Tamura et al. (US 6,156,869) is withdrawn because claims 1-4 and 7 were amended.

6. Claims 1-6 and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7-10 of U.S. Patent No. 5,366,832 in view of and Oka et al. (US 5,760,608).

Regarding claims 1-6 and 8, U.S. Patent No. 5,366,832 (Patent '832) teaches the limitations recited in these claims except for the use of a polyamide fiber and its formation as recited in claim 1, sections (i) and (ii).

However, Patent '832 does teach that the separator further contains a synthetic fiber, as recited in claim 2.

Oka teaches a polyamide, useful in industrial uses such as general-purpose engineering plastics, composed of a polyamide composed of 60 to 100 mole % of terephthalic acid and a diamine component comprising at least 60 mole %, preferably at least 75 mole %, and more preferably 95 mole %, of 1,9-nonanediamine (including mole % of 65, 70, 80, 85 and all ranges therebetween) (Abstract; 3:53-56, 4:12-16). The polyamide can be shaped into films and fibers (8:18-25).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the polyamide of Oka to form the synthetic fiber used in the separator of Patent '832 to improve the separator's mechanical and chemical properties (i.e., heat resistance, mechanical characteristics, low-water absorption property and chemical resistance) (see Oka, Abstract).

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Correspondence / Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 7 a.m. - 3 p.m. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795